Arch Chemicals, Inc.

MATERIAL SAFETY DATA

FOR ANY EMERGENCY, CALL 24 HOURS/7 DAYS:	**1-800-654-6911**
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300
FOR ALL MSDS QUESTIONS & REQUESTS, CALL MSDS CONTROL:	1-800-511-MSDS

PRODUCT NAME: HTH® FAST CHLOR® CLEANING LIQUID CHLORINATOR

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 10-30-2003 SUPERCEDES: 09-12-2002
MSDS NO: 00036-9024 - 11102

MANUFACTURER: **Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204**

SYNONYMS: Liquid bleach
CHEMICAL FAMILY: Hypochlorite
FORMULA: NaOCl in water
DESCRIPTION: Swimming pool chlorinator, Microbiocide
OSHA HAZARD CLASSIFICATION: Oxidizer, unstable (reactive), corrosive to skin and eyes, lung toxin

SECTION 2 COMPONENT DATA

PRODUCT COMPOSITION
CAS or CHEMICAL NAME: Sodium hypochlorite
CAS NUMBER: 7681-52-9
PERCENTAGE RANGE: 7-15
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: 2 mg/cubic-meter (15 min. TWA) - AIHA WEEL Guideline

CAS or CHEMICAL NAME: Water

CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 73-87
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Sodium hydroxide
CAS NUMBER: 1310-73-2
PERCENTAGE RANGE: 0.5-2.5
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		2	None Established	
CEILING:	None Established			2
STEL:	None Established		None Established	

CAS or CHEMICAL NAME: Sodium chloride
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 5.0-11.0
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

SECTION 3 PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN OR EYES, UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. AVOID BREATHING MISTS, VAPORS OR AEROSOLS.
STORAGE CONDITIONS: Store in a cool, dry, well-ventilated area. Avoid high temperatures and exposure to and direct sunlight.
DO NOT STORE AT TEMPERATURES ABOVE: 15-21 Deg.C (60-70 Deg.F)
OTHER: Store in the dark at the lowest possible temperature, but keep from freezing.
PRODUCT STABILITY AND COMPATIBILITY
SHELF LIFE LIMITATIONS: Up to 6 months at 60 Deg.F. or lower
INCOMPATIBLE MATERIALS FOR PACKAGING: Metal containers
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Oxidizers, acids, nitrogen containing materials such as quaternary ammonium salts.

SECTION 4 PHYSICAL DATA

APPEARANCE: Greenish-yellow liquid
FREEZING POINT: No Data
BOILING POINT: Decomposes on heating
DECOMPOSITION TEMPERATURE: Decomposes as heated
SPECIFIC GRAVITY: 1.08-1.26
BULK DENSITY: Not Applicable
pH @ 25 DEG.C: 12-14
VAPOR PRESSURE @ 25 DEG.C: No Data
SOLUBILITY IN WATER: Miscible
VOLATILES, PERCENT BY VOLUME: 87.5-94.5
EVAPORATION RATE: No Data
VAPOR DENSITY: No Data
MOLECULAR WEIGHT: 74.5 (active ingredient-NaOCl)
ODOR: Chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

SECTION 5 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility and toxicity are low. If vapors, mists, or aerosols are generated, wear a NIOSH approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

SKIN AND EYE PROTECTIVE EQUIPMENT: Use chemical safety goggles and impermeable gloves.

OTHER: Emergency eye wash and safety showers must be provided in the immediate work area.

EQUIPMENT SPECIFICATIONS:
RESPIRATOR TYPE: NIOSH approved respirator equipped with chemical cartridges for protection against chlorine gas and dust mist pre-filters.

PROTECTIVE CLOTHING TYPE (this includes: gloves, boots, apron, Protective suit): Natural rubber, Nitrile rubber or Neoprene

SECTION 6 FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE:	No
COMBUSTIBLE:	No
PYROPHORIC:	No
FLASH POINT:	Not Applicable

AUTOIGNITION TEMPERATURE : Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health:	3
Flammability:	0
Reactivity:	2

EXTINGUISHING MEDIA: Not applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fire, use dry chemical, Carbon dioxide or water spray. On large fires, use water in flooding quantities as fog. In case of fire, hazardous concentrations of chlorine may be formed. See Section 11 for personal protective equipment for fire fighting.

SECTION 7 REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE

TEMPERATURES ABOVE: Decomposes as it is heated
MECHANICAL SHOCK OR IMPACT: No
ELECTRICAL (STATIC) DISCHARGE: No
OTHER: Decomposition will result from contact with iron or copper
HAZARDOUS POLYMERIZATION: Will not occur
INCOMPATIBLE MATERIALS: Iron, copper, acids, ammonium compounds, organics, other oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas
OTHER CONDITIONS TO AVOID: High heat, sunlight and ultra-violet light

SUMMARY OF REACTIVITY:

OXIDIZER:	Yes
PYROPHORIC:	No
ORGANIC PEROXIDE:	No
WATER REACTIVE:	No

SECTION 8 FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has

stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

SECTION 9 TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IN INHALED OR SWALLOWED. HARMFUL IF EXPOSED TO SKIN OR EYES. CAUSES BURNS TO SKIN, EYES, MUCOUS MEMBRANES, RESPIRATORY TRACT AND DIGESTIVE TRACT.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 0.9 mg/cubic-meter (0.3 ppm) based on odor of chlorine.

IRRITATION THRESHOLD: There is no data for irritation threshold.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH : No IDLH concentration has been established for this product. However, Sodium hypochlorite has the potential to be immediately dangerous to life or health.

SIGNS, SYMPTOMS AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:

Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN

ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause permanent damage.

CHRONIC:

Repeated dermal exposure may cause tissue destruction due to the corrosive nature of the product.

INGESTION

ACUTE:

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea,

vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

CHRONIC:
There are no known or reported effects from chronic exposure. Chronic ingestion of significant amounts of this product is unlikely because of its acute corrosive action.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Asthma and respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known or reported.

ANIMAL TOXICOLOGY
ACUTE TOXICITY:
INHALATION LC50: No available data
ORAL LD50: > 5 g/kg (rat)
DERMAL LD50: > 2 g/kg (rabbit)
Causes burns to eyes and skin

ACUTE TARGET ORGAN TOXICITY:
This product is corrosive to all tissues contacted and upon inhalation may cause irritation to mucous membranes and the upper respiratory tract.

CHRONIC TARGET ORGAN TOXICITY:
There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:
There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:
Sodium hypochlorite has been shown not to be carcinogenic in laboratory animals. It is not included as a carcinogen by IARC, OSHA, NTP or EPA. IARC has conducted an evaluation on the carcinogenicity of hypochlorite salts. IARC has concluded that there is inadequate evidence for the carcinogenicity of hypochlorite salts in laboratory animals and there is no data available from studies in humans. Therefore, IARC considers hypochlorite salts to be not classifiable as to their carcinogenicity to humans.

MUTAGENICITY:
Sodium hypochlorite has been shown to produce damage to genetic material when tested in vitro. Studies in vivo have shown no evidence of mutagenic potential for this material. Chemicals with potent biocidal activity, typical of hypochlorite compounds, may compromise the integrity of many of the treated cells which remain viable during an in vitro assay. This result would likely produce cellular changes giving rise to a response indicative of mutation. It is judged that the risk of genetic damage is insignificant for sodium hypochlorite because of its biocidal activity, lack of mutagenicity in vivo, and failure to produce a carcinogenic response.

AQUATIC TOXICITY:
Bluegill (Lepomis macrochirus), 96 hr. LC50: 2.0 mg/l
Fathead minnow (Pimephales promelas), 96 hr. LC50: 1.4 mg/l
No mortality to Rainbow trout (Oncorhynchus mykiss) at 0.5 hr. Exposure to 0.9 mg/l.
Daphnia magna, 24 hr. LC50: 0.18 mg/l

SECTION 10 TRANSPORTATION INFORMATION

This product is regulated as a hazardous material under U.S. DOT 49 CFR 172.101.

Product is packaged, described and marked to ship under Consumer Commodity Exception as permitted under 49 CFR 173.154 Exception for Class 8 (Corrosive Materials).

U.S. DOT Ground: Consumer Commodity, ORM-D
Hazardous Substance under 49 CFR 172.101, Appendix A: No
Emergency Response Guidebook# 154
Labels/Placards: Not Required

ICAO/IATA Air: Hypochlorite Solution, 8, UN1791, III

IMDG Ocean: Same As Air.
Listed Marine Pollutant: No

Labels/Placards: Corrosive Class 8

SECTION 11 SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300

REPORTABLE QUANTITY(POUNDS): 100 lbs. (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:
Hazardous concentrations in air may be found in local spill area and immediately downwind.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. Capture all run off water for treatment and disposal.

WATER RELEASE: This material is soluble in water. Dike or contain material via use of compatible absorbents. Remove material with use of vacuum or pump operation and treat before disposition. This material is harmful to aquatic life.

LAND SPILL: Compatible absorbents: Sand, clay soil, commercial absorbents

SPILL RESIDUES:
Dispose of per guidelines under Section 12, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
Response to this material requires the use of a NIOSH approved self contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. these items include but are not limited to boots, gloves, impervious clothing, i.e. chemically impermeable suit.

Compatible materials for response to this product are: natural rubber, nitrile rubber or neoprene.

SECTION 12 WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA

hazardous waste number: D002.

As a hazardous liquid waste, it must be disposed of in accordance with local, state and federal regulations in a permitted hazardous waste

treatment, storage and disposal facility by treatment.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

SECTION 13 ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act inventory.

NSF LIMITS: NSF Maximum Drinking Water Usage Concentration - 250 mg/l as sodium hypochlorite

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III: None Established
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH:
Immediate (Acute)
PHYSICAL:
Fire
Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:
EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
None Established
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

SECTION 14 ADDITIONAL INFORMATION

MSDS REVISION STATUS: Revisions made to Sections # 1 and 10

SECTION 15 MAJOR REFERENCES

1. Hasegawa et al. Carcinogenicity Study of Sodium Hypochlorite in F344 Rats. Food and Chemical Toxicology, Vol.24, No.12, pp.1295-1302, 1986.
2. Hayashi et al. Micronucleus Tests in Mice on 39 Food Additives and Eight Miscellaneous Chemicals. Food and Chemical Toxicology, Vol. 26, No. 6, pp. 487-500, 1988.
3. Ishidate et al. Primary Mutagenicity Screening of Food Additives Currently Used in Japan. Food and Chemical Toxicology, Vol. 22, No.8, pp. 623-636, 1984.
4. MacKellar, D. G. and Weiner, M. L., Acute Toxicity of Sodium Hypochlorite, Sodium Dichloro-s-Triazinetrione Dihydrate and s-Triazinetrione to the Water Flea (Daphnia magna). FMC, Princeton, New Jersey. ICG/T-78-076, August 14, 1978.
5. Matsuoka et al. Chromosomal Aberration Tests on 29 Chemicals Combined with S9 Mix In Vitro. Mutation Research, 66 (1979) pp.277-290.
6. Wilde et al. Acute Toxicity of Chlorine and Bromine to Fathead Minnows and Bluegills. Bulletin of Environmental Contamination & Toxicology,Vol.31, pp. 309-314, 1983.
7. Wlodkowski, T. J. and Rosenkranz, H. S. Mutagenicity of Sodium Hypochlorite for Salmonella typhimurium. Mutation Research, Vol. 31 (1975) pp. 39-42.

AQUIRE Database (Aquatic toxicity), Chemical Information Systems, Oxford Molecular Group, Inc., Hunt Valley, MD.
Workplace Environmental Exposure Level (WEEL) Guide, Sodium Hypochlorite. American Industrial Hygiene Association, Fairfax, VA, 1991.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Vol. 52. Chlorinated Drinking Water; Chlorination By-Products; Some Other Halogenated Compounds; Cobalt and Cobalt Compounds. World Health Organization, International Agency for Research on Cancer (IARC), Lyon, France, 1991.
Forsberg, K., and S.Z. Mansdorf, Quick Selection Guide to Chemical Protective Clothing, 2nd Edition, Van Nostrand Reinhold, N.Y., 1993.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION INTHIS MSDS SHOULD BE PROVIDEDTO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.

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